

February 4, 2011

TO: Division Directors and Associate Laboratory Directors

FROM: A. Paul Alivisatos, Director

SUBJECT: Laboratory Directed Research and Development FY 2012 Call for Proposals

With this Call for Proposals, I am initiating the FY 2012 Laboratory Directed Research and Development (LDRD) Program. The LDRD program constitutes one of the principal means to seed innovative science and new research directions.

An important factor in judging proposals will be their support of competencies aligned with the Laboratory's and DOE's strategic directions. Multi-investigator and multi-divisional initiatives are particularly encouraged. Cross-disciplinary projects aimed at reducing human interference with the natural carbon cycle and projects from all divisions that advance the boundaries of ultrafast photon science are of special significance. In addition to traditional reviews, such projects will receive a special complementary assessment as part of the proposal selection process. All projects should have: a clearly stated problem (addressing a challenging scientific question, DOE mission, or national need), coherent objectives, and a well-considered plan for leadership, organization, and budget.

For the FY 2012 cycle, we will continue with a mutually exclusive two-track review process. The first track will be proposals reviewed as Divisional and/or Laboratory-wide, and these will be reviewed by a broad representation of all senior managers. The second track will be for proposals for the "Discovery" review. These are intended to be smaller proposals with higher scientific risk and potential payoff, and will be reviewed and funding recommendations made by external scientific reviewers.

The total funding level of the FY 2012 LDRD program should be about \$21.0M for operating and capital equipment expenses (with G&A). Capital equipment funding must support a project that receives operating funds. This Call for Proposals (CFP) will be announced in *Today at Berkeley Lab*, and a copy of this memo will be emailed directly to Berkeley Lab scientists and engineers. The complete call, schedule, guidance, and forms will be available on the Web (<http://www.lbl.gov/DIR/LDRD/>). All proposals are to be submitted through a web-based submission system that can be accessed via the CFP website.

Proposals should be put into the submission system by Friday, March 18. If you have questions, or need assistance, you can email [ldrd@lbl.gov](mailto:ldrd@lbl.gov).

#### Attachments

C: Senior, Staff, and Faculty Scientists & Engineers via email (w/o Attachments)  
Business Managers  
Chief Financial Officer  
T. Hansen

## **Call for Proposals**

### **FY 2012 Laboratory Directed Research and Development Program**

#### Purpose

It is the policy of the Department of Energy (DOE) and the Lawrence Berkeley National Laboratory to encourage innovation, creativity, originality, and quality to keep its research activities and staff at the forefront of science and technology. To further this objective, the Laboratory allocates a portion of its operating funds for Laboratory Directed Research and Development (LDRD), at a level approved by DOE. Under DOE guidelines, LDRD projects shall be in the forefront areas of science and technology. LDRD projects normally shall be relatively small and should also include one or more of the following characteristics:

1. Advanced study of hypotheses, concepts, or innovative approaches to scientific or technical problems.
2. Experiments and analyses directed toward “proof of principle” or early determination of the utility of new scientific ideas, technical concepts, or devices.
3. Conception and preliminary technical analysis of experimental facilities or devices.

#### Eligible Projects

As indicated above, LDRD funds may be used to support new research directions. Multi-divisional initiatives or single division projects, which open new programmatic opportunities, are encouraged. A major fraction of the available LDRD funds is targeted for proposals in support of projects that have significant potential for growth. Principal Investigators are encouraged to consider and submit proposals that can support laboratory initiatives through conceptual studies or proof-of-principle type experiments. Multi-investigator and multi-divisional R&D projects are encouraged. A proposal should demonstrate the following: a clearly stated problem addressing a national need; coherent objectives; and a well-considered plan for leadership, organization, and budget. As in the past, we will also fund some outstanding single-investigator research proposals.

This year, projects that explore integrated, cross-disciplinary approaches to restoring balance to Earth’s carbon cycle are particularly encouraged, including projects that involve multiple disciplines and/or that integrate energy analysis or climate modeling with the development of new technologies. Potential technology research areas include energy efficiency, energy for the developing world, carbon capture and sequestration, energy storage, solar photovoltaics, and artificial photosynthesis. These projects are expected to enhance the technical basis for the Carbon Cycle 2.0 initiative, further details of which can be found at: <http://cc2.lbl.gov/>.

Projects from all divisions that advance the boundaries of ultrafast photon science are also encouraged. These projects are expected to enhance the technical basis for the Next Generation Light Source (NGLS) initiative, further details of which can be found at: <http://www.lbl.gov/LBL-Programs/ngls/science/>.

In addition to traditional reviews, such projects will receive a special complementary assessment of their relevance to laboratory strategic directions as part of the proposal selection process.

For the FY 2012 cycle, we intend to continue with a mutually exclusive two-track review process. The first track will be proposals reviewed as Divisional and/or Laboratory-wide. The Laboratory-wide proposal review addresses those that generally are more cross-divisional and larger scale, and intended to initiate and/or develop major new strategic directions. If Principal Investigators and their Division Director anticipate the proposal would be appropriate for this forum, the scientist(s) should also discuss the proposal with their area Associate Laboratory Director (ALD) prior to submission. These will be reviewed by a broad representation of all senior managers. Final selection of proposals for this review will be made by the Deputy Director in consultation with the ALDs. As in the past, Divisional proposals will also support single-investigators and small-groups. These will be reviewed by the area Division Directors as well as senior managers.

The second track will be for proposals for the “Discovery” review. These are intended to be smaller proposals with higher scientific risk and potential payoff, and will be reviewed and funding recommendations made by external scientific reviewers. These proposals will be limited to full time LBNL scientists and engineers as Principal Investigators and be no more than \$120K prior to G&A assessment. These will nominally be considered as two-years projects but, like all LDRD projects, continuation proposals will have to re-compete and rank favorably with all other new and continuation proposals. Proposals intended for this review are to be identified as such at the time of proposal submission and will not be ranked with the other FY 2012 LDRD proposals. Further information is in the “Discovery” Review Addendum included as part of this Call for Proposals.

Consistent with DOE policy, it will not be possible to fund construction line-item or maintenance projects, or to increase the budget of projects funded by DOE or other sponsors. This last item is of particular concern; divisions should be careful to ensure that proposals make a clear distinction between the new work and any work discussed in FTP/As. All projects funded by LDRD must meet any applicable Berkeley Lab environment, health, and safety requirements. A decision to fund a proposal identified as multi-year does not create a commitment to provide funding in future years. Proposals for continuation LDRD funding must also be submitted and compete with new proposals. Funding can only be provided for three years maximum for any multi-year project, unless approval is given by the Director of the Office of Science in DOE.

### Process

The process for LDRD will be mostly similar to FY 2011, with proposals to be completed and submitted through the web-based proposal submission system. Oversight responsibility is delegated to the Deputy Director. Administrative questions on LDRD may be addressed to [ldrd@lbl.gov](mailto:ldrd@lbl.gov).

1. Investigators, with assistance from division support staff as needed, prepare and lock their LDRD forms and pdf of the scientific proposal in the web-based proposal submission system following the Call Schedule.
2. The final proposal will be a pdf file generated in this system consisting of the coversheet, budget page, and scientific proposal narrative. The proposals will be available for review and use by divisional LDRD Point of Contacts, Business Managers, and Division

Directors. The system will also have options for reviewers at the division level to rank and add comments as desired and specified by the Division Director. These files will also be accessible to laboratory senior managers and staff for review as well.

3. Division Directors will choose a review procedure to evaluate and rank proposals in their divisions. Division Directors may solicit expert scientific advice inside and outside of their division in their proposal review. Proposals for all continuing projects must be submitted and ranked along with proposals for new research. Where there is clearly a lead division, proposals should be ranked by the director of the lead division. Proposals that have a distributed program with no lead division should still be ranked by directors of each of the participating divisions. In addition, Division Directors must analyze the budget for each proposal and recommend a revised budget if appropriate.

Occasionally a proposal will be submitted that is outside the main ongoing interests of the division. These proposals should be flagged to insure they receive attention from relevant laboratory scientists.

4. A subset of the proposals should be proposed by Division Directors to the Deputy Director to be considered as major new directions for a broader “Laboratory-wide” review and selected proposals will receive a special review separate from the balance of the proposals.
5. An ordinal ranking of all other proposals for the Divisional proposal reviews will be submitted by Division Directors as an outcome of their internal divisional review process.
6. Division Directors will give a presentation of the Divisional proposals to a review committee composed of the Director, Deputy Director, and other Division Directors from the same program area. The presentations will be open to all Division Directors. If deemed necessary, the Laboratory Director or Deputy Director may also request the presence and/or advice of other scientific experts. Each Division Director must be prepared to answer questions about all aspects of each proposal.
7. Investigators that wish consideration via the second track or “Discovery” review process by external scientific reviewers shall so identify their proposals at submission. These proposals will be accessed only at the Directorate level, and will be excluded from the first track of Divisional and/or Laboratory-wide reviews. The Director and Deputy Director will request external reviewers to evaluate these and make recommendations for their final selections.
8. The Laboratory Director and Deputy Director confer with Associate Laboratory Directors for final selection recommendations. They will also ask for additional assessments from scientific managers and experts, possibly external as well as internal to the lab, on the scientific relevance of self-identified proposals related to the laboratory’s major initiatives.
9. After committee reviews of the submitted proposals, the selected projects are subject to EH&S, NEPA/CEQA, and Human and Animal Use review, with review forms completed and necessary approvals done prior to funding and the opening of project accounts.

## Required Information

Proposals should be prepared carefully following the given specifications and requirements. A Detailed Proposal Guidance is included with this Call. Proposals must meet the following requirements:

- Proposal length cannot exceed three pages. Figures and references may be included as a fourth page. Any other material exceeding the three-page limit will *not* be forwarded to the reviewers.
- The Cover Sheet and Budget Request forms must be filled out and submitted as instructed through the web-based submission system. Because of external reporting and approval requirements for the LDRD program, it is especially important that all fields on the coversheet are completed. After initial project selections are made, those having submitted successful proposals will be required to return a completed NEPA/CEQA review and Human Subjects/Animal Use forms.
- Proposals must contain clear statements of goals, work to be performed, how work will be done, and who will conduct the research.
- Proposals should describe the significance and value of the work, if successful.
- Proposals for continuing projects must include a statement of progress to date and current fiscal year plans within the three-page limit.
- Budget Requests must include payroll burden and support burden if applicable. Scientific organization burden and procurement burdens must also be included. General laboratory overhead (e.g., general and administrative overhead and site support) estimate should be included as a separate line item.

## Schedule

The nominal schedule for the FY 2012 cycle follows. Final detailed scheduling of the review period and Division presentations will be arranged by the Director's Office.

## **FY 2012 Laboratory Directed R&D (LDRD) Proposal Schedule**

<b><i>February 4, 2011</i></b>	Director issues call for proposals and guidance for FY 2012 LDRD to Division Directors and staff scientists.
<b><i>March 18, 2011</i></b>	Principal investigators submit and lock FY 2012 LDRD proposals in the web-based submission system for Division processing.
<b><i>April 8, 2011</i></b>	Division Directors recommend proposed FY 2012 LDRD “Laboratory-wide” proposals.
<b><i>April 8, 2011</i></b>	Deadline for proposals identified by PI for “Discovery” track external scientific review submitted and locked in the web-based proposal submission system.
<b><i>April 15, 2011</i></b>	Director's Office issues final specific guidelines for proposal reviews.
<b><i>April 22, 2011</i></b>	Division Directors submit their ordinal rankings for the Divisional reviews.
<b><i>May 12 &amp; 13, 2011</i></b>	Reviews for all FY 2012 Lab-wide and Divisional proposals.
<b><i>May-June 2011</i></b>	”Discovery” track proposals, not in Lab-wide or Divisional process, reviewed by separate scientific reviewers (TBD).
<b><i>June 2011</i></b>	Director or Deputy Director notifies Division Directors of preliminary FY 2012 awards. Awards will also be announced after the start of the fiscal year in <i>Today at Berkeley Lab</i> after DOE approval and authorization to proceed.

## **Laboratory Directed Research and Development**

### **Detailed Proposal Guidance**

#### Cover Sheet

Project titles should be complete, and indicate what is new and innovative. They should enable reviewers to differentiate between the project and other ongoing research. Generic titles should be avoided, such as “Ceramic Studies” or “Data Acquisition Electronics.” Titles should be technically informative and up to 12 words in length. An example is: “Experimental Testing of Novel Mismatch Repair Enzymes for Mapping Natural Genetic Polymorphisms.”

Typically, the location of the research should not be included in the title unless the scope of the project bears directly on the facility. Phrases such as “at Berkeley Lab,” “at RHIC at Brookhaven,” or “at the ALS” normally are not useful. If the project location does have such bearing, it is important to make clear in the proposal the difference between the project and the existing operating program, including the reason the project does not augment the facility’s budget. Because LDRD is for conducting actual research rather than establishing organizations, titles and proposals need not refer to the creation of centers or institutes, but rather address the technical context of the project itself.

The purpose and approach statements of the proposal cover sheet will be used for the approval submissions and reports sent to DOE. Thus, these paragraphs should be self-contained and complete, and must fit in the space provided. The form is to be prepared and submitted electronically through the web-based proposal submission system.

Projects that may extend beyond one year should describe what is achievable during each fiscal year. Multi-year projects must compete each year with all other new and continuation proposals, and resubmissions should indicate what is being accomplished during the current year and what is being proposed for the fiscal year under proposal review.

#### Budget

Narratives and budgets must be consistent. If staff effort and activities are described in the narrative, they must be covered in the budget. LDRD projects cannot be supported by other funds, either DOE or Work For Others. LDRD projects may utilize existing equipment or facilities of the laboratory, and they may acquire or fabricate additional equipment. However, if the scope of the project is to fabricate new innovative equipment, both the operational effort of personnel and purchase of items must be completely covered in the LDRD project budget. LDRD budgets must be able to achieve a self-contained scientific purpose and scope. Thus LDRD projects cannot be proposed solely for the purchase of equipment, since this equipment must be operated to achieve some purpose. However, the preliminary design or prototype fabrication of new equipment may be proposed to extend or develop some new technique, process, capability, etc.

For approved projects, divisions must retain notes or documentation of cost estimates provided in the proposed budgets, following budgetary guidance issued by the Chief Financial Officer. These notes should include the estimates of staffing levels and notes of vendor quotes or catalog references. Notes for funded projects should be held in division files for potential cost validations to be performed by the Department of Energy or other auditors. During proposal preparation, Principal Investigators should retain notes in anticipation of these cost validation requirements. Divisional organization burden is to be included, which is around 16-22%, as well as appropriate indirect costs. The Laboratory’s General and Administrative (G&A) and site support burdens are included in LDRD costs, and are not to be redirected to other cost categories.

Please consult with division staff or the Budget Office for specific details of your division's burden rate and indirect charges. LDRD projects have overhead accounts monitored by the Directorate and are not a part of other budget units of the Laboratory. Nevertheless, all staff administering the LDRD accounts must adhere to all financial and cost accounting principles as well as other programmatic requirements applicable to the Laboratory and their division. Monthly cost profiles will be required of all successful projects at the start of the fiscal year.

### Proposal Narrative

The proposal narrative is to be a maximum of three pages, though a fourth page of figures and references may be included. It should be a brief, stand alone description of the scientific goal(s) or problem(s), the hypothesis for a solution, and the work to be performed to test the hypothesis. Descriptions should also include the significance and value of the work if successful. There should also be a short discussion of who will conduct the work, and continuing projects must include a statement of progress to-date and future plans within the three-page limit. The proposal will be photocopied in black-and-white and so be readable, and any figure(s) informative, in such a reproduction. There should be adequate 1" margins for readability and three-hole punch.

A lab-wide Linux cluster computer named Lawrencium is available to the Lab scientific community for general use. Details about the cluster can be found at <http://lrc.lbl.gov>. If you require access to this cluster for your proposed project, you should include this information in the proposal and estimate the number of node-hours you will be requesting for the fiscal year.

### Annual Report

Information for the Annual Report will be requested during the first two months of the following fiscal year. The purpose of the report is to give a brief overview of the project and its general scope of accomplishments to the Department of Energy and senior laboratory managers. The request will call for a Project Description, typically an update and revision to the "purpose and approach" paragraphs of the proposal coversheet, and an additional one to three paragraphs to describe the findings/outcomes for the year. Long, elaborate narratives of methodological details, extensive tabular data, or detailed scientific justification or results, will not be appropriate to this report. Other requirements are a list of published, submitted, or draft papers and reports that are the direct result of project funding, and answers to a questionnaire on program metrics such as people hired and/or invention disclosures. This report is not considered a "publication," rather it is a short synopsis for reporting to government entities on the use of taxpayers funds. Information should not be included in this report that is appropriately reserved for a scientific publication or patent disclosure. The final report is made available to the National Technical Information Service and posted on the World Wide Web.



## **“Discovery” Proposal Review Addendum**

For the FY 2012 cycle of LDRD proposal reviews, the Laboratory Director is continuing a mutually exclusive two-track review process. The first track, similar to prior years, will be proposals reviewed as Divisional and/or Laboratory-wide. The second track will be for proposals for the “Discovery” review. These are intended to be smaller proposals with higher scientific risk and potential payoff, and will be reviewed and funding recommendations made by external scientific reviewers. These proposals will be limited to full time LBNL scientists and engineers as Principal Investigators and be no more than \$120K prior to G&A assessment. These will nominally be considered as two-year projects but, like all LDRD projects, continuation proposals will have to re-compete and rank favorably with all other new and continuation proposals. Proposals intended for this review are to be identified as such at the time of proposal submission and will not be accepted for consideration under the first track FY 2012 LDRD competition.

All proposals for the “Discovery” track review must comply with the DOE and Laboratory requirements of the LDRD program as summarized elsewhere in this LDRD FY 2012 Call for Proposals. They must be self-contained scientific projects that do not augment existing funding. The proposals themselves should follow the same instructions as for all LDRD proposals regardless of the preferred review process. Investigators that wish consideration via the second track or “Discovery” review process by external scientific reviewers must so identify their proposals at submission. These proposals, when submitted in the web-based LDRD submission system, will be accessed only by Laboratory Director, Deputy Director, and Directorate staff.

The Laboratory Director and/or Deputy Director will solicit suggestions for external reviewers from the Laboratory’s scientific leadership and other scientists, as they consider appropriate, and ask potential reviewers for their participation. These reviewers will not include anyone also participating at the divisional level in the traditional LDRD track one review processes.

The “Discovery” review committee will rate the LDRD proposals and receive administrative support from the Directorate. They will have the option to decide among themselves whether to request additional information or technical presentations from the Principal Investigators. Consistent with the track one review schedule, their review should take place and their recommendations for funding be completed by the end of June.

The Discovery reviewers will be asked to review proposals based on the following criteria:

- 1) Boldness and innovation, with strong potential for impact on the field
- 2) Quality of science
- 3) Potential of post-project funding, and relevance to DOE missions and national needs

The reviewers or laboratory senior management may weight the different criteria as they think appropriate subject to constraints that scientific innovation is a minimum of 50% of the total, and the weighting be consistent for all proposals they review. At the conclusion of their review, the committee will make funding recommendations to the Laboratory Director and Deputy Director. Final decisions on projects selected will be made by the Laboratory Director and Deputy Director and be announced along with the other FY 2012 LDRD proposals.

Once funded, no distinction or separate requirements will be made on LDRD projects regardless of the review process they underwent.